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(54) APPARATUS FOR LOADING AND UNLOADING LORRIES



(71) We, GIANZSTOFF AG., a body Corporate organised under the laws of Germany, of 5600 Wuppertal-Elberfeld, Germany, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to an apparatus for loading and unloading lorries.

In the loading of dissimilarly packed goods, each individual package can in the most favourable cases be carried by a mechanical aid (for example a fork-lift truck) up to the loading surface of the lorry. In general, packages of this kind usually have to be stacked in the loading area by hand in order to prevent the loads from shifting during transportation. The sequence of operations involved is reversed to unload the vehicle.

Pallets are being used to an ever increasing extent for loading similarly packed piece goods. The pallets are generally carried by a fork-lift truck from the storage area in which they are packed with the goods to be transported to the loading surface of the lorry and deposited thereon.

Both methods of loading and unloading, with or without pallets, are extremely time-consuming because the loading surface is only accessible from one side, namely from the rear narrow side of the lorry.

It has now been found that the loading of vehicles can be considerably simplified and speeded up by equipping the vehicles with replaceable loading platforms which, after they have been loaded with the goods to be transported, are pushed together on to the loading surface of the vehicle which is backed up to a loading ramp.

According to the invention there is provided an apparatus for loading and unloading a lorry comprising a replaceable loading platform having substantially the same surface areas as a loading surface of the lorry, the replaceable loading platform being provided on its underside with a plurality of

rows of rollers or balls extending in the direction of movement, and the loading surface of the lorry having a corresponding number of guide tracks for receiving the said rollers or balls to allow the loading platform to be displaced, the loading platform being composed of a plurality of identical individual sections rigidly joined together by means of coupling elements.

The individual sections can be standardised in size and shape in such a way that they can be joined together to form a platform adapted to the particular type of lorry being used, by means of locking devices arranged around the periphery of the individual sections.

The invention makes it possible to load and unload the platform quickly from all four sides inside the existing storage areas. This can optionally be done by means of pallets although in this case the replaceable loading platform must be adapted to the size of the pallets which is tailored to the loading areas normally available.

Loading and unloading of lorries can be considerably speeded up by use of the replaceable loading platforms according to the invention so that, by virtue of the considerable reduction in the periods for which the individual vehicles remain parked alongside the loading ramps, it is possible to obtain a considerable increase in the loading and unloading rate.

The invention is described in detail in the following with reference to the accompanying drawings, wherein:

Figure 1 is a side elevation of a lorry with a replaceable loading platform behind it on a loading ramp;

Figure 2 is a view corresponding to Figure 1, but taken from above;

Figure 3 is a cross-section through the loading surface of a lorry with a loading platform mounted on it; and

Figure 4 is a cross-section through part of the replaceable loading platform equipped with a roller received on a guide track.

Figures 1 and 2 show a replaceable load-

ing platform 3 on a loading ramp 2 which has been pushed immediately behind a loading surface 1 of a lorry backed up to the ramp. The platform 3 has been loaded with different kinds of goods 4, 5, 6 and 7. Rollers 12 and 13, which could alternatively be replaced by balls or so-called ball rollers, are fitted to the platform 3 in suitable mountings to enable the loading platform 3 to move more easily in all directions. Guide tracks 9 and 10 are provided on the loading surface 1 of the lorry, the guide tracks being so positioned that when the loading platform is pushed on to the loading surface the rollers or balls 12 and 13 run on these guide tracks. The loading platform is then fixed in a suitable manner (not shown in the drawings). In this way, loading can be completed over a very short period.

In the embodiment shown in the drawings, the replaceable loading platform has a relatively lightweight construction, consisting of an angle iron frame 11 which is sub-divided by steel bands 16, the frame and bands together carrying the body of the loading platform 3. The load-bearing properties of the platform are thus derived from the number and arrangement of supporting rollers or balls 12, 13 which are themselves load-bearing.

Figure 4 shows in section how the outer rollers or rows of balls can be received on the loading surface designed for the replaceable loading platform. The outer guide tracks 9 simultaneously act as a boundary to the loading surface, preventing the loading surface from slipping sideways, for example where balls are used instead of the rollers 12, when the side walls 15 of the lorry are swung down. In addition, the guide tracks 9 also act as a bearing surface and as a guide means when the replaceable loading platform is pushed on. The supporting structure 14 for the rollers or balls 12, 13 are fixed to the supporting frame of the loading platform, for example to the peripheral angle iron 11 and the connecting steel bands 16.

It is alternatively possible for the loading platform 3, especially where it is equipped with balls instead of rollers 12 and 13 or with pivotal rollers, to be brought on to the loading surface 1 from the side, providing the loading surface 1 is suitably aligned for this purpose. In this case, the guide tracks 9 and the bearing tracks 10 must extend transversely of the loading platform 1 and not longitudinally thereof as shown in Figure 2, and the lorry has to be parked alongside a boundary edge 8 of the loading ramp 2.

The replaceable loading platform 3 is sectioned in such a way that, before loading, the platform 3 is made up of three identical sections for adaptation to the par-

ticular lorry loading surface 1. Since a corresponding arrangement of rollers or balls 12, 13 makes each individual component of a sectioned loading platform 3 capable itself of bearing a load, the individual sections can be coupled together for example by coupling members provided with bolts which can be inserted downwards into corresponding bores in the corners of the sections and optionally locked from beneath and which, for example where four platform sections are joined together, have four and, at the edges, two pins. In this case, the pinned panels placed on can be flush with the upper edge of the platform 3 as a whole. It is readily possible by, for example, slightly inclining the pins so as to pull the corners to be joined together, to obtain a sufficiently strong connection between the individual sections of the replaceable loading platform 3 which make up the platform 3 as a whole. This is all the more easy in that the replaceable loading platform 3, being supported at regular intervals by the rollers or balls 12, 13, is only stressed by irregularities in the storage surfaces and in the loading ramp.

WHAT WE CLAIM IS:—

1. An apparatus for loading and unloading a lorry comprising a replaceable loading platform having substantially the same surface area as a loading surface of the lorry, the replaceable loading platform being provided on its underside with a plurality of rows of rollers or balls extending in the direction of movement, and the loading surface of the lorry having a corresponding number of guide tracks for receiving the said rollers or balls to allow the loading platform to be displaced, the loading platform being composed of a plurality of identical individual sections rigidly joined together by means of coupling elements.
2. An apparatus as claimed in claim 1, wherein the replaceable loading platform is adapted to be loaded in two or more sections and pushed separately on to the loading surface of the lorry.
3. An apparatus as claimed in any preceding claim, wherein co-operating means are provided on the replaceable loading platform and on the loading surface of the lorry for securing the loading platform during transportation.
4. An apparatus for loading and unloading a lorry substantially as herein described with reference to the accompanying drawings.

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